Editorial

iMedPub Journals
http://www.imedpub.com/

Advance Techniques in Clinical Microbiology

2017
Vol.1 No.2:10

Monoclonal Antibodies and Polyclonal Antibodies: A Brief Comparison

Ahmed Adel Seida

Immunology and Microbiology Department, Faculty of Veterinary Medicine, Cairo University, Giza, Egypt

Corresponding author: Ahmed Adel Seida, Immunology and Microbiology Department, Faculty of Veterinary Medicine, Cairo University, Giza, P.O. 12211, Egypt, Tel: +20237175004; Email: seida_aa@cu.edu.eg

Received date: April 11, 2017; **Accepted date:** April 21, 2017; **Published date:** April 27, 2017

Citation: Seida AA. Monoclonal Antibodies and Polyclonal Antibodies: A Brief Comparison. Adv Tech Clin Microbiol. 2017, 1:2.

Introduction

An antibody, a blood protein produced by plasma cells in response to a specific antigen (foreign).

It is called an immunoglobulin that is used for neutralization of the foreign pathogens like viruses, bacteria or any foreign bodies invade the blood. When antibodies produced from immunized animals against certain antigen will produce what is called polyclonal antibodies (PAbs) which are mixture of different antibodies produced by many different B cell clones that identify different epitopes (Antibodies binding sites) on the similar antigen like anti-tetanic serum [1]. On the other hand, monoclonal antibodies are homogeneous antibody preparations from a single antibody secreting B cell and able to bind with one exclusive epitope. Each single antibody in a polyclonal pool is theoretically a monoclonal antibody; however, the process by which B-cell clone isolation and fusion to myeloma immortalized cell line to produce hybridoma secreting huge amounts of identical antibody specific to unique epitope [1,2].

In this editorial I will highlight briefly the advantages and disadvantages of both polyclonal antibodies and monoclonal antibodies.

The advantages of the polyclonal antibodies are the simple skills needed to generate polyclonal antibodies. They are inexpensive and able to be generated quickly, taking about several months to yield. Polyclonal antibodies are heterogeneous, which are able to bind to a big variety of antigen epitopes. Because Polyclonal antibodies are generated from a large number of B cell clones, they are able to have strong binding to a specific antigen. Moreover, polyclonal antibodies tend to be more stable in many environmental conditions, such as a change in salt concentration or pH, which gave them the privilege to be included to several procedures [3-5].

The disadvantages of polyclonal antibodies are the differences between batches generated in different animals and times, tendency to produce hypersensitivity reactions and the cross reactivity potential due to the ability for distinguishing multiple epitopes which need affinity purification to reduce the cross reactivity [1,2].

For monoclonal antibodies, the advantages are high specificity to a single epitope, less cross reactivity, low tendency to produce hypersensitivity reactions, ability to generate huge quantities of identical antibody in the laboratory with high homogeneity from batch to batch and produce better results in the experimentations which need quantification of the protein levels. On the other hand, the disadvantages are significantly more expensive to produce; more strict storage conditions needed for the precious clone, required regular cell culture lab work and purification, minor changes in the epitope's structure able to reduce the ability of the monoclonal antibody to identify the target protein or epitope. Furthermore, tend to be more sensitive to buffer conditions and pH. Moreover, monoclonal antibodies are susceptible to changes in their binding capacity when they are labeled [1,2].

References

1. http://www.pacificimmunology.com
2. Seida AA (2015) Monoclonal antibodies preparation against tetanus toxins, ISBN: 978-3-659-39598-7, LAP LAMBERT Academic Publishing, Germany.
3. Critical steps in the production of polyclonal and monoclonal antibodies: Evaluation and recommendations. ILAR 46.
4. Suckow MA, Stevens KA, Wilson RP (2012) The laboratory rabbit, guinea pig, hamster and other rodents. Academic Press. ISBN 9780123809209.
5. Monoclonal versus polyclonal antibodies: Distinguishing characteristics, applications and information resources. ILAR 46.